of text-books furnished the material out of which they were chiefly made. Doubtless many of the labels were copied, without a glance at the specimen which it accompanied. There was far too little evidence of individual, independent observation. Let it be noted, however, that the essays which contained the most personal observations were the most accurate. It was in the essays most largely made up of copied labels that such strangely conglomerated statements as those I have quoted were to be found. This inculcated slavery to print is to my mind one great weakness of modern instruction in the elementary schools, so far as any hope of the promotion of science is concerned, and it is in museum study that one of the best remedies for it is to be found. In order that independent study may be encouraged it may be questioned whether the museum label should aim to give very extended information. To be sure, the mere copying or reading of the label serves to some extent to fix the information it contains upon the mind, but the knowledge would take firmer hold if this information could be gained by a study of the specimen. I have often noticed visitors of all ages studying an unlabeled collection with the greatest persistency and interest, and then have seen them finish it in a glance after it was labeled. They seemed to feel that they were relieved of any further responsibility in regard to it as soon as they saw the labels. Hence, Goode's well-known aphorism that 'a museum should consist of a collection of instructive labels illustrated by specimens' has its limitations. Uttered to call attention to the need for system and as a protest against the lumber room, it had a profound value, but modern experience will hardly consider it a final ideal. It is possible to so prepare and arrange collections that they will tell their own story without more labels than are needed to serve as hints or indexes. Such collections or exhibits will promote the spirit of observation, study and inquiry, and the more they do this the more will they contribute to the advancement of science.

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THE BOUNDARY LINE BETWEEN TEXAS AND NEW MEXICO.

The boundary line between Texas and New Mexico along the 103d meridian was the chief theme of a talk before the National Geographic Society on November 15 by Dr. Marcus Baker. This boundary, created in 1850, was surveyed and monumented, in part, in 1859 by John H. Clark, and his survey was confirmed by Congress in 1891. Recent official maps place this boundary two or three miles west of the 103d meridian, where the law declares it to be. The paper read before the Society was a summary of the results of an enquiry undertaken to discover and weigh the reasons for this discrepancy.

The original monuments set by a survey to mark a boundary in accordance with law, become, when confirmed, the boundary, even when followed by more accurate surveys which show the original monuments not to be where they were designed to be. The more accurate survey does not alter the boundary. It merely shows how well or ill the original survey was done. Of this line, 310 miles long, 180 miles were traced out and marked by mounds of earth or stone in 1859; the remaining 130 miles have not been surveyed. Of the 180 miles surveyed and marked, 24 are at the south end marked by 3 mounds and 156 at the north end marked by 23 mounds. The longitude of the south end of the line was determined by chaining eastward from El Paso along the 32d parallel 211 miles, the initial station being

Frontera of the Mexican boundary survey. Obviously this is a very weak longitude determination. It was not checked by astronomical observations originally, nor has it been since. Nor has it been checked in any other way. According to present knowledge the three monuments at the south end are on the 103d meridian and should be so shown on our maps until subsequent and better surveys shall find these monuments and show that they are not on the 103d meridian. As to the 130 miles of unsurveyed line north of the short piece, at the south end of the boundary, this part is obviously coincident with the meridian.

The longitude of the 23 mounds on the northern part of the line depends upon the one at the N.W. corner of Texas. That corner monument was set in August, 1859. Its longitude was obtained by transfer from some point on the 37th parallel, 35 miles to the northward. In 1857 a surveying party under Lieutenant-Colonel Johnston measured westward along the 37th parallel from the west boundary of Missouri 471 miles to the 103d meridian. Clark was the astronomer in Johnston's party and determined by moon culminations the longitude of the monument set by Johnston to mark the intersection of the 103d meridian and 37th parallel. The longitude of the mound at the N.W. corner of Texas, set by Clark in 1859, therefore depends upon the longitude of a point determined by himself, astronomically, two years previously on the 37th parallel. How accurate was Clark's determination? Nobody knows. Various surveys under the direction of the Land Office have been made in this vicinity since Clark's original one, but his monument has not been found. Two monuments have since been established to mark the point which Clark intended to mark and which he supposed he did mark. One of these was set by John J. Major, in 1874, and another by Richard O. Chaney, in 1881. Major searched for Clark's monument, failed to find it and 'reestablished' it, *i. e.*, set a new one. The evidence is conclusive that Major's monument was set more than two miles west of Clark's. Chaney's monument is some four or five miles east of Major's. Chaney did not find either Clark's or Major's. Thus three monuments or mounds have been built to mark the N.W. corner of Texas, one by Clark in 1859, another by Major in 1874, and a third by Chaney in 1881. Clark's alone marks the boundary and that one is lost.

Of the 22 remaining mounds marking the northern part of the boundary two, and only two, are known to still exist. These two are in sight of one another and on opposite banks of the Canadian River. They were found and reported to the General Land Office by the land surveyors Taylor and Fuss in 1883. We have no information as to their longitude other than that furnished by Clark himself, who reported them on the 103d meridian.

In the present state of our knowledge it seems highly desirable that the boundary should appear on our maps on the 103d meridian. At the same time it is even more important that topographic surveys be made along this line and as many as possible of the original Clark monuments identified and accurately placed on the map. This done the whole line should be run out, old monuments restored and new monuments built. If this is done before the discovery of oil, mineral or things coveted, a costly and bitter boundary dispute can be avoided.

Since the above was written I have learned of a recent survey which has materially added to our knowledge of the present state of this boundary. Mr. E. D. Preston, U. S. Deputy Surveyor, retraced the Clark line on the 103d meridian from

the Canadian river northward to the corner, a distance of about 75 miles, in the summer of 1900. This was done by direction of the General Land Office and his MS. report is now on file in that office. Of the 12 monuments set by Clark in 1859 on this part of the line Preston identified 3 certainly and, doubtfully, 4 in all. Clark's line, according to Preston, bears N. 0° 08′ W.

In 1882 W. S. Mabry, county surveyor of Dallam county, the northwesternmost county of Texas, retraced a part of the Clark line and assisted in building a pasture fence for the XIT or Capital Land and Cattle Company. The corner of that pasture was established at the point supposed by Mabry to be Clark's corner. This XIT corner is now locally recognized as the N. W. corner of Texas. According to Preston's survey it is 'within 150 links of the proper position east of the Johnston monument.' It is about $2\frac{1}{4}$ miles east of the lost Major monument of 1874 and is 2 miles 14.05 chains west of the Chaney monument of 1881. Clark's monument, according to Clark, is in longitude 103°. Chaney's monument, according to Chaney, is in longitude 103°. These monuments differ in longitude by more than 2 miles. Which one is the better determination is unknown. Both longitudes are weak—Clark's is a fair determination by a weak method, Chaney's a weak determination by a strong method. A new and strong determination by a strong method is much to be desired.

SCIENTIFIC BOOKS.

Biologia Centrali-Americana, Insecta, Lepidoptera-Rhopalocera. By FREDERICK DUCANE GODMAN, D.C.L., F.R.S., and OSBERT SALVIN, M.A., F.R.S., etc. Vol. I., Text, pp. i–xlvi + 1–487; Vol. II., Text, pp. 1–782; Vol. III., Plates, I.–CXII. and XXIVa. Published by the authors. Royal 4to. 1879–1901.

In the present age it is recognized as one of the functions and duties of wealth to minister at the altar of learning. The upbuilding of great institutions, the object of which is the ascertainment of truth and the diffusion of knowledge, is regarded as one of the high prerogatives of those who have command of material resources. Splendid have been the achievements in recent years of those who have consecrated their wealth to founding or aiding in the endowment of colleges, universities, libraries and museums; but perhaps no enterprise undertaken by wealth is likely in coming years to be regarded as more important and monumental in its character than the great work to which Messrs. Frederick Ducane Godman and Osbert Salvin addressed themselves when they conceived the idea of preparing and giving to the world the encyclopedic work known as the Biologia Centrali-Americana. Of this work it may be said that it constitutes *monumentum aere perennius.*

It is with profound satisfaction that we welcome the appearance in final form of the three volumes devoted to the Rhopalocera of Mexico and the Central American republics. For twenty-two years these volumes have been slowly appearing in parts. The delay is most reasonably explained by the surviving editor and author, Mr. Godman, as due 'to the constant pressure of other work, the ever-increasing amount of material, the gradually failing health and subsequent death of Mr. Salvin, and the great difficulty of dealing with the Hesperiidæ.' The work, however, has not lost, but has rather profited by delay. The exceedingly satisfactory treatment of the Hesperiidæ, which a few years ago would have been impossible, and the supplementary pages and plates cause the student, now that the work is completed, to feel thankful that the editors followed the good maxim, *festina lente.* Had they completed the work before the region had been traversed by the various collectors whom their munificence placed in the field, and had they not been able to profit by the researches in the family of the Hesperiidæ made by Captain E. Y. Watson, the work would not have been the eminently satisfactory work which it now proves to be. There is yet much to be